Brainstorming Ideas for a New Investigation

Now it is time to work with your teammates to plan your own investigation. What questions do you have about photosynthesis or cellular respiration that you can investigate?

☑Does the light source affect the rate of photosynthesis?

How does the rate of photosynthesis affect the rate of cellular respiration?

☑Does temperature affect photosynthesis?

☑Does the species of leaves affect the rate of photosynthesis?

Use this handout to write 3 questions related to photosynthesis and/or cellular respiration that you might choose to investigate. After you complete your brainstorming, you will work with your scientist mentor to get feedback about your experiment and its design. You may find that one of your ideas may be a better foundation for an investigation than the others--or you may find that some of your ideas can actually be combined into one investigation.

## Potential Research Question 1

1. Research Question:  
   Does the species of leaves affect the rate of photosynthesis?
2. Why do you think this investigation will help you learn something new about photosynthesis and/or cellular respiration?  
   The investigation will allow us to see the difference between the species of leaves instead of just using baby spinach leaves.
3. Write a brief outline of how you will do your investigation.  
   We will do our investigation by doing the same experiment as last time, but we’re going to repeat the experiment several times with different types of leaves.
4. What data will you measure and record?  
   We will measure the time it took for each leaf disk to float and record how many were floating each minute.
5. Describe how this experiment tells you something about plants in the world around us.

Which plant species photosynthesizes more than that of the other species of plants.

## Potential Research Question 2

1. Research Question:  
   Does the light source affect the rate of photosynthesis?
2. Why do you think this investigation will help you learn something new about photosynthesis and/or cellular respiration?  
   This investigation will allow us to see whether a regular light bulb, heat light, or sunlight affect the rate of photosynthesis.
3. Write a brief outline of how you will do your investigation.

We will do the same steps as last experiment, of which we punch holes in spinach leaves, infiltrate the leaf disks, and place the disks into a solution of baking, along with a light source above the solution.

1. What data will you measure and record?  
   We will measure the time taken for the leaf disks to float and record how many disks are floating each minute.
2. Describe how this experiment tells you something about plants in the world around us.

The different types of light will prove that not just the sun influences photosynthesis

to occur.

## Potential Research Question 3

1. Research Question:  
   Does temperature affect photosynthesis?
2. Why do you think this investigation will help you learn something new about photosynthesis and/or cellular respiration?  
   Yes because I know that temperature affects plant growth because there is less sunlight, but does the temperature directly affect how photosynthesis? That’s an interesting question.
3. Write a brief outline of how you will do your investigation.  
   We’re going to try several different temperatures, and see in which one does the leaf disks float the fastest. For the investigation, we will infiltrate the leaf disks and place the disks into solutions of baking soda.
4. What data will you measure and record?  
   We will measure and record how many disks float and how many are floating each minute.
5. Describe how this experiment tells you something about plants in the world around us.

It will tell me if I need to get a greenhouse in the wintertime so my plant don’t die

or frost over.